

**INDIAN MARITIME UNIVERSITY**  
(A Central University, Government of India)  
**End Semester Examination Dec 2019/Jan 2020**  
**B.Sc. (Nautical Science)**  
**Semester -III**  
**UG21T2306- Navigation-III**

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**Date: 14.12.2019**

**Max Marks: 70**

**Time: 3 Hours**

**Pass Marks: 35**

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**Note:** - All questions carry equal marks.

1. Use of Non-programmable scientific calculator, Norrie's Tables and Nautical almanac is permitted.
  2. Chart 5049 or equivalent to be provided by Exam Centre.
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**CELESTIAL NAVIGATION**

(Question no 1 is compulsory. Attempt any 3 from the remaining. All questions carry equal marks.)

1. Define or Explain following: - (5X2=10 Marks)
  - i) Equinoctial
  - ii) Magnitude of star
  - iii) first Point of Aries
  - iv) Local Hour angle
  - v) Sidereal hour angle (SHA)
  
2. a) Explain Standard Time. (5 Marks)  
b) Establish a relationship between GHA and LHA mathematically with a suitable diagram. (5 Marks)
  
3. a) Explain angle of Dip with respect to apparent altitude of heavenly body. (5 Marks)  
b) Define with sketch "Vertical Circle" and "Prime Vertical". (5 Marks)
  
4. On 1<sup>st</sup> of May 1992, Sextant altitude of Sun's LL was found to be  $34^{\circ} 13.6'$ . If the IE was 1.8' on the arc and HE was 14 m, find the true altitude of the Sun using all corrections individually. (10 Marks)
  
5. On 14<sup>th</sup> Sept 2008, in Long  $124^{\circ} 42'W$ , the sextant meridian altitude of the Sun's UL North of the observer was  $71^{\circ} 22.4'$ . If the IE was 1.8' on the arc and HE was 14m, find the Latitude and state the direction of LOP. (10 Marks)

## VOYAGE PLANNING

(Question no 6 is **compulsory**. Attempt **any 2 from** the remaining. All questions carry **equal marks**.)

6. Explain why it is necessary to plan before commencement of the voyage. (10 Marks)
  7. List 10 Nautical publications required to plan a safe passage. (10 Marks)
  8. Explain **any one**: - (2X5 Marks)
    - i) Monitoring stage of passage planning.
    - ii) Planning stage of passage planning.
  9. Explain with reference to passage planning: - (2X5 Marks)
    - i) Abort point
    - ii) Choice of Anchorage
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